

Remarks

The Applicants acknowledge the receipt of the Office Action mailed January 7, 2009. Claims 1-53 are pending in this application. Claims 1-53 stand rejected. By this amendment, claims 1, 4-6, 8-12, 18, 20-22, 26, 43-44, and 46-51 have been amended in various particulars as indicated hereinabove. Accordingly, amended claims and supporting remarks are hereby presented to more particularly point out and distinctly claim the subject matter that Applicants regard as their invention. No new matter is being added.

Claims 1-52 were rejected under 35 U.S.C. 102(b) or, in the alternative, under 35 U.S.C. 103(a) over Nakamura (US Patent No. 6,236,904).

Claims 7-8 were rejected under 35 U.S.C. 103(a) over Nakamura in view of Tanigawa (U.S. Patent Application Publication No. 2001/0022930).

Claim 53 is rejected under 35 U.S.C. 103(a) over Nakamura in view of Hassan (US Patent No. 3,968,885).

These rejections are respectfully traversed for the following reasons.

It is well established that a claim is anticipated under 35 U.S.C. §102, only if each and every element of the claim is found in a single prior art reference.¹ Moreover, to anticipate a claim under 35 U.S.C. §102, a single source must contain each and every element of the claim “arranged as in the claim.”^{2, 3} Missing elements may not be supplied by the knowledge of one skilled in the art or the disclosure of another reference.⁴ If each and every element of a claim is not found in a single reference, there can be no anticipation.

¹ *Veregal Bros. v Union Oil Co. of California*, 814 F.2d 628, 631, 2USPQ2d 1051, 1053 (Fed. Cir. 1987).
² *Structural Rubber Prods. Co. v. Park Rubber Co.*, 749 F.2d 707, 716, 223 U.S.P.Q. 1264, 1271 (Fed. Cir. 1984).

³ *Lewmar Marine Inc. v. Barient, Inc.*, 827 F.2d 744, 747, 3 U.S.P.Q. 2d 1766, 1768 (Fed. Cir. 1987), cert. denied, 484 U.S. 1007 (1988).

⁴ *Titanium Metals Corp. v. Banner*, 778 F.2d 775, 780, 227 U.S.P.Q. 773, 777 (Fed. Cir. 1985).

For an obviousness rejection to be proper, the Patent Office must meet the burden of establishing a prima facie case of obviousness. The Patent Office must meet the burden of establishing that all elements of the invention are disclosed in the cited publications, which must have a suggestion, teaching or motivation for one of ordinary skill in the art to modify a reference or combined references.⁵ The cited publications should explicitly provide a reasonable expectation of success, determined from the position of one of ordinary skill in the art at the time the invention was made.⁶ Multi-reference rejections are improper, tending to teach away from the combination.

I. Rejections under 35 U.S.C. § 102(b)

Independent claim 1, as now amended, recites an apparatus for automated loading and unloading of substrates in a vacuum environment. The apparatus comprises a vacuum vessel in a form of an enclosure bounding a loading and unloading chamber, wherein the loading and unloading chamber comprises a substrate holder, a transfer port in communication with an evacuated region outside the vacuum vessel, and release means. According to the invention of currently amended independent Claim 1, the substrate holder includes a substrate support table for supporting a substrate, and locating means co-operable with the substrate support table for causing a substrate which is supported thereon to be pressed against and thereby located on the substrate support table. The release means withhold the co-operation of the locating means with the substrate support table and provide a temporary support of the substrate clear of the substrate support table so as to permit movement of the substrates to and from the substrate holder. Furthermore, the loading and unloading chamber is hermetically sealed apart from the transfer port to allow for the vacuum environment to prevail in the loading and unloading chamber. Still further, the loading and unloading chamber is adapted for

⁵ *In re Sang Su Lee*, 277 F.3d 1338, 61 USPQ2d 1430 (Fed. Cir. 2002).

⁶ *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970);

Amgen v. Chugai Pharmaceuticals Co., 927 U.S.P.Q.2d, 1016, 1023 (Fed. Cir. 1996);

receiving and outputting the substrate holder, wherein the transfer port allows for transferring the substrate holder between the vacuum environment of the loading and unloading chamber and the evacuated region.

Independent Claim 46, as currently amended, recites a substrate processing machine having an evacuated region and incorporating a substrate processing station. The machine comprises a substrate loading and unloading apparatus including a vacuum vessel in a form of an enclosure bounding a loading and unloading chamber. The loading and unloading chamber according to currently amended independent Claim 46, comprises a substrate holder, which includes a substrate support table for supporting a substrate and locating means co-operable with the substrate support table to cause a substrate which is supported thereon to be pressed against and thereby located on the substrate support table. The loading and unloading chamber further includes a transfer port in communication with an evacuated region outside the vacuum vessel, and release means for withholding the co-operation of the locating means with the substrate support table and providing a temporary support of the substrate clear of the substrate support table so as to allow for movement of substrates to and from the substrate holder. Further, the loading and unloading chamber is hermetically sealed apart from the transfer port to allow for the vacuum environment to prevail in the loading and unloading chamber. In addition, the loading and unloading chamber is adapted for receiving and outputting the substrate holder, wherein the transfer port allows for transferring the substrate holder between the vacuum environment of the loading and unloading chamber and the evacuated region.

Amendments to independent Claims 1 and 46 have been made to more clearly reflect that the loading and unloading chamber is a vacuum chamber. Namely, as recited in currently amended independent Claims 1 and 46, the apparatus comprises a vacuum vessel in a form of an enclosure bounding a loading and unloading chamber. This amendment is supported by the specification (see, for example, p.10, line 23; lines 29-31). Further, the amendments to independent Claims 1 and 46 reflect that the transfer port allows for transferring the substrate holder between the vacuum environment of the

loading and unloading chamber and the evacuated region. This amendment is also supported by the specification (see, for example, p.2, lines 22-24; p.2, line30 through page 3, line 18). Still further, the amendments to independent Claims 1 and 46 indicate that the loading and unloading chamber is hermetically sealed apart from the transfer port to allow for a vacuum environment to prevail in the loading and unloading chamber. This amendment is also supported by the specification (see, for example, p.10, lines 31-32; p.16, lines 32-33). In addition, the amendments to independent Claims 1 and 46 point out that the loading and unloading chamber is adapted for receiving and outputting the substrate holder. This amendment is also supported by the specification (see, for example, p.2, lines 21-24; p. 8, lines 5-8; p. 11, lines 7-23).

Contrary to the invention of independent Claim 1, as currently amended, Nakamura discloses a substrate conveying system for conveying large size wafers and addresses a problem of interference of the carrier and large size wafers. The system of Nakamura comprises a wafer hand 2 for holding, by vacuum attraction, a wafer 3. According to Nakamura, the wafer remains on the hand 2 until it is transferred into a slot of the box 8.

It is respectfully submitted that Nakamura does not teach a vacuum vessel in a form of an enclosure bounding a loading and unloading chamber. Nowhere in the specification or claims does Nakamura disclose the loading and unloading chamber being hermetically sealed apart from the transfer port to allow for the vacuum environment to prevail in the loading and unloading chamber. Moreover, Nakamura suggests a wafer hand holding a wafer by vacuum attraction. As well known in the art, vacuum attraction cannot be implemented in a vacuum environment. Applicants respectfully submit that Nakamura does not disclose a substrate support table for supporting a substrate. Nor does Nakamura teach release means for providing a temporary support of the substrate clear of the substrate support. Nowhere in the specification or claims does Nakamura suggest a transfer port allowing for transferring the substrate holder between the vacuum environment of the loading and unloading chamber and the evacuated region.

Applicants respectfully submit that Nakamura does not include each and every element of independent Claims 1 and 46, as currently amended. It is therefore respectfully submitted that the inventions recited in independent Claims 1 and 46 are not anticipated by Nakamura and withdrawal of this rejection is respectfully requested.

Claims 2-45, depend directly or indirectly from independent Claim 1 and therefore contain each and every element of independent Claim 1; Claims 47-53 depend directly or indirectly from independent Claim 46 and therefore contain each and every element of independent Claim 46. Therefore, for the reasons already set forth for independent Claims 1 and 46, Claims 2-45 and 47-53 should also be in condition for allowance.

II. Rejections under 35 U.S.C. § 103(a)

Regarding independent Claims 1 and 46, as now amended, Applicants respectfully submit that, as disclosed in detail above, Nakamura does not include each and every element of independent Claims 1 and 46, as currently amended. Furthermore, it is respectfully submitted that Nakamura does not hint or suggest a vacuum vessel in a form of an enclosure bounding a loading and unloading chamber. Nowhere in the specification or claims does Nakamura hint or suggest the loading and unloading chamber being hermetically sealed apart from the transfer port to allow for the vacuum environment to prevail in the loading and unloading chamber. Nor does Nakamura hint or suggest a substrate support table for supporting a substrate. Furthermore, Nakamura does not hint or suggest release means for providing a temporary support of the substrate clear of the substrate support. In point of fact, nothing in Nakamura illustrates, teaches, or otherwise suggests a transfer port allowing for transferring the substrate holder between the vacuum environment of the loading and unloading chamber and the evacuated region.

Based on the above reasoning Applicants respectfully submit that independent Claims 1 and 46, as currently amended, are not obvious over Nakamura. Therefore, withdrawal of this rejection is respectfully requested.

Claims 2-45, depend directly or indirectly from independent Claim 1 and therefore contain each and every element of independent Claim 1; Claims 47-53 depend directly or indirectly from independent Claim 46 and therefore contain each and every element of independent Claim 46. Therefore, for the reasons already set forth for independent Claims 1 and 46, Claims 2-45 and 47-53 are not obvious over Nakamura and should also be in condition for allowance.

Applicants respectfully submit that Claims 7-8 are indirectly dependent from Claim 1 and therefore contain each and every element of independent Claim 1. The deficiencies identified with respect to Nakamura are not rectified by any teachings of Tanigawa. It is respectfully submitted that nothing in Nakamura, alone, or in combination with Tanigawa suggests a vacuum vessel in a form of an enclosure bounding a loading and unloading chamber. Nowhere in the specification or claims do Nakamura and/or Tanigawa disclose the loading and unloading chamber being hermetically sealed apart from the transfer port to allow for the vacuum environment to prevail in the loading and unloading chamber. Nor do Nakamura and/or Tanigawa teach a substrate support table for supporting a substrate. Furthermore, Nakamura and/or Tanigawa do not disclose release means for providing a temporary support of the substrate clear of the substrate support. Nor do Nakamura and/or Tanigawa disclose a transfer port allowing for transferring the substrate holder between the vacuum environment of the loading and unloading chamber and the evacuated region.

Therefore, for the reasons just set forth, it is respectfully submitted that Claims 7-8 are not obvious in view of any combination of Nakamura and Tanigawa. Therefore, the

rejection of Claims 7-8 under 35 U.S.C. 103 (a) has been traversed and withdrawal of this rejection is respectfully requested.

It is respectfully submitted that Claim 53 depends directly from independent Claim 46 and therefore contain each and every element of independent Claim 46. The deficiencies identified with respect to Nakamura are not remedied by any teachings of Hassan. Applicants respectfully submit that nothing in Nakamura, alone, or in combination with Hassan suggests a vacuum vessel in a form of an enclosure bounding a loading and unloading chamber. Nowhere in the specification or claims do Nakamura and/or Hassan disclose the loading and unloading chamber being hermetically sealed apart from the transfer port to allow for the vacuum environment to prevail in the loading and unloading chamber. Nor do Nakamura and/or Hassan teach a substrate support table for supporting a substrate. Furthermore, Nakamura and/or Hassan do not disclose release means for providing a temporary support of the substrate clear of the substrate support.

Therefore, for the reasons set forth above, it is respectfully submitted that Claim 53 is not obvious in view of the cited references. On these grounds, Applicants respectfully submit that the rejection of Claim 53 under 35 U.S.C. 103 (a) has been traversed and withdrawal of this rejection is respectfully requested.

In addition, with regard to the Examiner's Response to Applicants arguments filed on 10/16/2008, it is respectfully submitted that the Applicants disagree with the Examiner's interpretation of the term "vessel". The Examiner refers to the meaning "agent of some quality", but this meaning has been wrongly taken out of its lexicographic context. In this respect, one specific meaning of a "vessel" is a person regarded as a holder or receiver of a non-material attribute, examples being: a "vessel of grace", a "vessel of wrath", a "vessel of mercy", and the like. These are out-dated Biblical uses of the term "vessel", but only as applied to a person the term still means a receptacle. Thus,

